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- (A)*
21. (New) The array of claim 20, wherein the biomolecules comprise peptides or proteins.
22. (New) The array of claim 20, wherein the biomolecules comprise oligonucleotides or nucleic acids.
23. (New) The array of claim 20, wherein the biomolecules comprise ligands or receptors.
24. (New) The array of claim 20, wherein the beads comprise different types of beads, said bead types being distinguishable by the biomolecules attached thereto.
- (Sub B2)*
25. (New) The array of claim 20, wherein the beads comprise different types of beads, said bead types being distinguishable by the biomolecules attached thereto and wherein the beads of each type are further distinguishable by a unique chemical or physical characteristic that identifies said bead type.
26. (New) The array of claim 25, wherein the beads of each type are encoded with a chemical label that uniquely identifies said bead type.
- (Sub B3)*
27. (New) The array of claim 20, wherein the beads comprise different types of beads, said bead types being distinguishable by the biomolecules attached thereto, and wherein the array comprises subarrays that are spatially separated from each other, the location of the subarrays on the substrate uniquely identifying the types of beads located therein.
- (Sub B4)*
28. (New) The array of claim 20, wherein the substrate comprises a silicon electrode.
29. (New) The array of claim 20, wherein the biomolecules are exposed to a liquid phase.

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30. (New) A method of detecting the formation of a target-biomolecule complex comprising the following steps:
- providing an array of beads on a substrate according to claim 20,
contacting said beads with a sample that may contain a target compound such that, if the target is present in said sample, said target interacts with said biomolecule to form a target-biomolecule complex; and
detecting the formation of the target-biomolecule complex.
31. (New) The method of claim 30, wherein the beads comprise different types of beads, said bead types being distinguishable by the biomolecules attached thereto.
32. (New) A method of detecting the formation of a target-biomolecule complex comprising the following steps:
- providing an array of beads on a substrate according to claim 20, wherein said beads comprise different types of beads, said bead types being distinguishable by the biomolecules attached thereto, and wherein the beads of each type are further distinguishable by a unique chemical or physical characteristic that identifies said bead type;
contacting said beads with a sample that may contain a target compound such that, if the target is present in said sample, said target interacts with said biomolecules to form target-biomolecule complexes;
detecting the formation of the target biomolecule complexes; and
identifying the biomolecules of the target biomolecule complexes by means of the unique chemical or physical characteristics of the beads associated with said complexes.
33. (New) The method of claim 32, wherein the beads of each type are encoded with a chemical label that uniquely identifies said bead type.